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BCG VACCINATION AS A METHOD OF RESEARCH.

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ACCORDING to most reports, for example Riley (1950), only about 35% of patients suffering from sarcoidosis have a positive tuberculin skin reaction. This is in marked contrast to the normal population, 80% of whom have a positive reaction by the age of 30 in England. In order to evaluate the significance of this tuberculin anergy, a number of investigators, beginning with Lemming (1940), have vaccinated tuberculin-negative sarcoid patients with BCG. The results show that out of 24 cases so treated only 25% showed Mantoux conversion (Israel *et al.*, 1950), whereas in normal tuberculin-negative individuals there is a 90% conversion rate. Further, according to Lemming (1942) and Leider and Sulzberger (1949), the local reaction to the vaccination is atypical; and Cornbleet (1950) noted improvement in the sarcoidosis following the procedure.

Tuberculin anergy is also relatively common in Hodgkin's disease (Dublin, 1947; Rottino and Hoffmann, 1950), and de Marval (1940) failed to procure Mantoux conversion in these cases by BCG vaccination. The findings were similar in a case of histoplasmosis (Israel *et al.*, 1950) and in cutaneous beryllium granuloma (Leider and Sulzberger, 1949).

The present report deals with the results of BCG vaccination in five cases in which a negative Mantoux reaction was considered to be a direct accompaniment of the condition for which they were attending the skin department.

MATERIAL.

CASE 1.—A woman aged 48 with widespread cutaneous and pulmonary sarcoidosis. Tuberculin reaction negative to 1:100 old tuberculin.

CASE 2.—A woman aged 51 with widespread glandular sarcoidosis and a single cutaneous lesion. Tuberculin reaction negative to 1:100 old tuberculin.

CASE 3.—A woman aged 44 admitted with erythema nodosum and found to have bilateral hilar adenitis, but no other abnormal physical signs. Tuberculin reaction negative to 1 : 10 old tuberculin. This case was considered to be one of sarcoidosis.

CASE 4.—A man aged 67 with widespread maculo-anaesthetic lepromatous leprosy. Lepromin test negative. Tuberculin reaction negative to 1 : 10 old tuberculin.

CASE 5.—A man aged 33 with acne agminata (lupus miliaris disseminatus faciei). Tuberculin reaction negative to 1 : 100 old tuberculin.

RESULTS.

Effect on tuberculin sensitivity.—The tuberculin skin reaction was unchanged in all five cases when re-tested 2 months after BCG vaccination. In Case 4 revaccination did not alter the result. These findings are in agreement with previous reports. Israel and his colleagues (1950) failed to alter the tuberculin sensitivity in any of 20 tuberculin-negative sarcoid patients to 0.00002 mg. PPD, while 55.2% of their control group reacted to this strength as a result of BCG vaccination.

Local reaction.—The local reaction was fairly constant in all the five cases. A macule appeared in 3 or 4 days and became a papule by the end of the first week. Pustulation occurred in 2 to 4 weeks, and ulceration, which resulted in all five cases, in 3 to 6 weeks. Healing, leaving a small, atrophic scar, took place in 8 to 10 weeks. Thus the reaction was very similar to that which occurs in normal tuberculin-negative individuals, and was the same as that obtained by Israel and his colleagues (1950). Leider and Sulzberger (1949), on the other hand, produced a papule at the site of vaccination, which did not ulcerate and which persisted indefinitely. Microscopic examination of a biopsy of the papule showed a sarcoid reaction (Leider and Hyman, 1950). That this should occur in certain cases is not surprising, when it is remembered that the phenomenon not infrequently occurs in sarcoid patients after Mantoux testing. Its significance as a finding which supports the concept that sarcoidosis is caused by the tubercle bacillus is vitiated, however, by the fact that the same thing occurs following the intradermal injection of extracts of sarcoid lymph-gland (Kveim antigen) and of normal human spleen (Nelson, 1948).

Effect on the disease.—No improvement was noted in any case. In Case 1 a cutaneous lesion 4 in. from the site of vaccination became inflamed a week after. When the inflammation had subsided, three weeks after the vaccination, a slight spread was noted at the periphery of the lesion. No other lesions, cutaneous or pulmonary, were affected.

DISCUSSION.

The facts that the majority of sarcoid patients have negative tuberculin skin reactions, and that this tuberculin anergy is not affected by BCG vaccination, can no longer be used to support the concept that sarcoidosis is a peculiar response

to the tubercle bacillus. Similar phenomena are found in Hodgkin's disease, mycosis fungoides (Rostenberg, 1951), histoplasmosis, beryllium skin granuloma, leprosy and acne agminata. Further, in sarcoidosis, immunological response to antigens other than those of the tubercle bacillus is also depressed, for example, to pertussis vaccine (Israel *et al.*, 1950). Similar results are found in Hodgkin's disease with regard to spirochaetal, typhoid and brucella antigens (Dubin, 1947). All responses are not equally depressed. In the case of histoplasmosis the histoplasmin test was strongly positive; and erythema nodosum, considered to be an allergic reaction, occurs not infrequently in sarcoidosis, leprosy and deep fungus infections. That the tuberculin reaction is depressed, and not suppressed, in sarcoidosis was shown by Seeberg (1951). He produced strongly positive tuberculin skin reactions in Mantoux-negative cases by injecting the tuberculin in an oily base, thus keeping it in contact with the skin in a higher concentration for a longer time.

Nevertheless, the fact remains that in certain chronic granulomatous conditions there is a non-specific depression in immunological response. It is frequently suggested that this phenomenon can be explained on the basis of damage to the reticulo-endothelial system. It is difficult to see how this applies to single or localized cutaneous granulomata, such as the lesion caused by beryllium, or acne agminata.

Rostenberg (1951) suggests that, in sarcoidosis, an antibody is produced which has antituberculin properties, but that this antigen arises as a response to some micro-organism other than the tubercle bacillus; and he cites the Weil-Felix reaction, seen in certain rickettsial conditions, as an analogy. His alternative explanation is that the anti-tuberculin factor may be an abnormal protein without being an antibody, and he draws a parallel between this possibility and the "C" reacting protein produced in many infective states.

Since both the conditions in which immunological reactions are depressed and the immunological agents themselves are so variable, it seems more likely that the phenomenon depends on the constitution of the individual rather than on the malady from which he suffers. About 10% of normal individuals who are tuberculin-negative do not become tuberculin-positive after BCG vaccination. It is suggested, therefore, that the incidence of the granulomatous conditions under consideration may be greater in these individuals than in the rest of the population, and that this is so possibly because of their peculiar immunological state. This is rendered less probable by the fact that tuberculin anergy has been seen to develop in patients with early sarcoidosis (de Marval, 1940) and Hodgkin's disease (Rottino and Hoffmann, 1950). Nevertheless, testing normal tuberculin-negative individuals, who do not respond to BCG vaccination, with a wider selection of antigens, and a careful follow-up of this group with regard to the incidence of granulomatous conditions, might help to explain this intriguing problem.

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FURACIN SOLUBLE DRESSING IN THE TREATMENT OF VARICOSE ULCERS.

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FURACIN (5-nitro-2-furaldehyde semicarbazone) is reported to have a wide antibacterial range *in vitro* against Gram positive and negative organisms, being bactericidal and bacteriostatic in high and low concentrations respectively (Dodd and Stillman, 1944). For topical use the most suitable vehicle would seem to be a carbowax and propylene glycol base which is neutral, water-soluble, and allows ready release of the drug. Reports of skin reactions following the application of Furacin in such a base have been published, but their percentage frequency has been somewhat inconstant. Downing, Hanson and Lamb (1947) found that 5.5% of normal people reacted in forty-eight hours, but only one in a series of 147 cases of various skin disorders developed a reaction. In another series 7 of 65 patients treated manifested sensitivity. Shipley and Dodd (1947) noted 2 reactions in 90 cases of surface infection treated.

Despite reports of reactions, favourable results have been recorded in the treatment of many infective skin conditions including varicose ulceration (Shipley and Dodd, 1947; Downing, Hanson and Lamb, 1947). Their observations suggest that a high degree of control of Gram positive and negative organisms is achieved and that granulation and epithelization of ulcers is unimpaired. So far there has been no clinical evidence of toxicity from absorption.

In view of these favourable claims, therefore, treatment of the following series of cases of varicose ulceration was instituted. The results are now recorded.

CASES TREATED.

Twenty-five cases of varicose ulceration were treated with 0.2% Furacin in a carbowax and propylene glycol base on gauze. All patients had varicose veins of the legs and the ulcers had been present for an average period of nine years, although the lower and upper limits were two months and forty years

respectively. The largest ulcer was $7\frac{1}{2}$ inches by $3\frac{1}{2}$ inches, and the smallest $\frac{3}{4}$ by $\frac{3}{4}$ inch. Five patients had a previous history of phlegmasia alba dolens, and six of the series presented evidence of peripheral arterial occlusion as shown by the absence of the dorsalis pedis arterial pulse. One case suffered from macrocytic anaemia and another was a senile diabetic. Twenty patients were female and five male, the average age being fifty-five years. Some were treated ambulant and others at rest; supportive measures were adopted in the ambulant cases either in the form of crêpe, or Ceraban adhesive, bandage. Those treated at rest were recumbent in hospital with leg elevation. Ulcers were dressed daily with the exception of occluded lesions, which were left undisturbed for weekly intervals.

RESPONSE TO FURACIN OINTMENT.

In most cases treated an initial reduction of pus in the discharge was noted within a few days. The granulations became much cleaner and less oedematous and finally exudation was minimal and macroscopically serous. In deep ulcers the base became progressively more superficial. With only a few exceptions a healthy epithelial edge quickly developed. In the successfully treated cases complete healing occurred at a varying rate, and this variation often had apparently no relationship to the original size.

Figs. 1 and 2 illustrate the result obtained in a recumbent case.

Analysis of the results is shown in Table I. This reveals that eleven of the twenty-five healed uneventfully. In the remaining fourteen therapy was discontinued because of the development of local dermatitis or because the ulcers remained static or deteriorated.

Of the ulcers which healed without complication the average duration was twelve years, a figure greater than that for the series as a whole. Some of them, however, had healed on previous occasions only to break down again. The average dimensions were 1.4 by 1.1 inches, and the mean healing time was seven and a half weeks.

TABLE I.—*Analysis of the Results of Treatment of Twenty-five Cases.*

Varicose ulcers.	Treated.	Healed.	Remaining unhealed.		
			Improved but developed dermatitis.	Static.	Deteriorated (local thrombo-phlebitis).
Ambulant cases	15	6	5	1	3
Recumbent cases	10	5	3	2	0
Total cases	25	11	8	3	3



FIG. 1.—Ulcers of 6½ years' duration before Furacin treatment.



FIG. 2.—After 43 days' Furacin therapy (recumbent).

DEVELOPMENT OF DERMATITIS.

When dermatitis occurred it appeared as small grouped congestive papulovesicles at the edge of the ulcer. These lesions quickly discharged serous fluid and became confluent, producing a localized area of exudative dermatitis restricted to the dressing site. In some cases, however, it was noted that an early dermatitis could be aborted if care were taken to place subsequent Furacin gauze dressings directly over the ulcers and to avoid contact with the surrounding skin, the latter being protected by frequently changed dressings of $\frac{1}{2}\%$ ichthammol in oily calamine lotion. As a result of this observation, and in an effort to minimize the possibility of dermatitis, the routine has been adopted of applying the ointment to the ulcerated area only and as far as possible avoiding contact with the surrounding skin.

Of the eight cases in which therapy was discontinued because of dermatitis, two had suffered from slight local varicose dermatitis at the outset and three gave a history of antecedent dermatitis in relation to the ulcer. In the remaining three there was no previous history of dermatitis and in these the cause was directly ascribed to Furacin ointment. The average period taken for dermatitis to develop was ten weeks. This is well outside the mean healing time of the successfully treated cases. In two of those ascribed directly to Furacin severe secondary sensitization dermatitis developed on the face and limbs. Neither local nor general sensitization reactions had any adverse effect on the actual ulcers; although the ulcer discharge became more profuse it remained clear and the granulations healthy. In two cases which at the commencement of treatment had low-grade dermatitis surrounding the ulcers, the taking of the already mentioned precautions resulted in healing of both ulcers and dermatitis.

The dermatitis which appeared to result from, or be reactivated by, Furacin ointment cleared quickly when the application was withdrawn and other measures adopted.

Two cases developed further attacks of dermatitis a few days after the resumption of Furacin therapy. In one the intervening period was fourteen weeks. It is suggested, therefore, that once sensitivity is known to exist, the further use of the preparation should be avoided. Continuation is justified only in early cases of dermatitis which have been aborted.

DETERIORATION OR FAILURE TO PROGRESS.

Deterioration occurred in three cases following severe local thrombophlebitis and extensive breakdown of the ulcerated area. Furacin ointment therapy was discontinued in favour of other measures.

Three cases remained virtually static. All presented evidence of interference with the peripheral arterial supply of the lower limbs. The first was

a senile diabetic, the second suffered from macrocytic anaemia, whilst the third had associated periostitis. In this small group, therefore, failure of the repair mechanism was attributable to factors peculiar to each case.

SUMMARY.

1. Twenty-five cases of varicose ulceration were treated with 0.2% Furacin Soluble dressing. Fifteen were ambulant and ten recumbent.
2. The proportionate success was much greater in the recumbent cases. Eleven cases of the whole series were completely healed.
3. Eight cases were improved but treatment had to be discontinued because of dermatitis. The dermatitis responded quickly to other measures following discontinuance of Furacin therapy. In three cases only could the dermatitis be directly attributed to Furacin Soluble dressing.
4. Three cases remained static. In these there was evidence of impaired peripheral arterial circulation and other systemic disease.
5. Three cases deteriorated, probably because of local thrombophlebitis.
6. Furacin Soluble dressing dermatitis is probably a contra-indication to the future use of the application, but pre-existing dermatitis or an early reaction does not necessarily rule out the therapy provided adequate precautions are taken.
7. It is concluded that Furacin Soluble dressing seems to be a further useful adjuvant in the treatment of varicose ulcers.

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We should like to thank Messrs. Menley & James for their kindness in making available supplies of Furacin Soluble Dressing.

CONGENITAL PILAR DEFECT SHOWING FEATURES OF
PILI TORTI.

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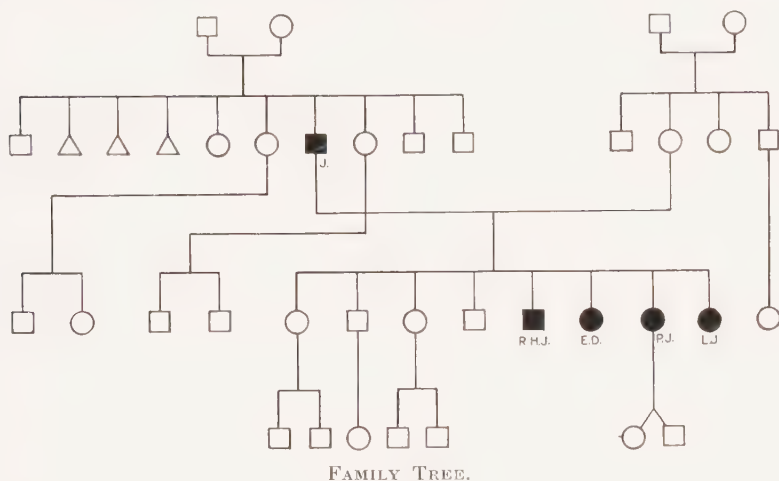
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THE congenital abnormality of the hair known as pili torti is extremely rare and has only once before been reported in British literature (Hellier, Astbury and Bell, 1940). The cases now reported show twisting of the hair in association with various other abnormalities, and their condition differs in certain aspects from the classical picture of pili torti as recorded in the world's literature. Five members of a family suffering from the defect were seen and examined personally.

A certain twisting of the hair around its own axis is occasionally found in normal hair (Danforth, 1925). The length of hair involved in the twist varies from one to several millimetres, or so great a distance that it is difficult to detect any twist at all. In general the twisting is not continuous, but tends to be interrupted. The first reference in dermatological literature to the condition now known as pili torti was by Schütz (1900), who, in a discussion on a case of monilethrix, also mentioned twisting of the hair. Riecke (1922) and Ormsby and Mitchell (1924, 1925) reported possible cases, but the condition was first fully dealt with by Ronchese (1932) and by Galewsky (1932) independently and at the same time (Ronchese, 1941) and the appropriate name "pili torti" applied. Credit for recognizing the condition should be given jointly to these two authors and not, as has been done, to Galewsky alone. Hellier noted 30 case reports (including his own case) up to 1940, and since then there have been a further six or possibly eight if, as will be discussed later, the two cases recorded by Ullmo in 1944 can be included. If the present five cases are acceptable this brings the total to 43, but both Ullmo's cases and my own have features which are not in conformity with the classical picture; on the other hand these cases may allow closer integration of the condition pili torti with the broad group of congenital pilar defects, and of cases of abnormal fragility of the hair.

CASE REPORTS.

The father, son and three daughters of this family suffered from an essentially similar abnormality of the hair. The mother, a daughter and a son are known to have normal hair; another daughter is believed to have normal hair, but she was not examined; a son, who died at the age of 20 months in 1924, is said to have had normal hair. All seven children of the fourth generation are known to be normal (see family tree).



Mrs. E. D—, third daughter (born 16.ii.1929).

The hair has always been coarse in texture. At the age of 15 years, following permanent waving, the hair began to fall out. Eyebrows and eyelashes were lost at the age of four years. Examination reveals partial alopecia with slight skin atrophy affecting the whole of the top of the scalp. The marginal hairs are short and very wiry, black in colour, and present a curious sheen when viewed in reflected light. The eyebrows and eyelashes are absent. There is only minimal body hair on the pubes and in the axillae. The skin is dry, but there is no keratosis pilaris. Nails are fragile and break off easily. Mentality is definitely below normal, and the patient seems to be rather irresponsible. She has had no children. No other abnormalities were detected on routine examination.



FIG. 1.—The eyebrow is completely absent and has been marked in with an eyebrow pencil.

Miss L. J—, fifth daughter (born 22.i.1934).

The condition of the hair is almost exactly the same as that described for her sister. Hair fall from the scalp was first noticed at the age of 14 years, and eyebrows and eyelashes were lost in early childhood. Likewise her nails are short and fragile. However, the skin is rather greasy and the patient complains of excessive sweating of all areas. No other physical abnormalities were found. Mentality is well below average and the patient's personality might be described as irresponsible and somewhat "scatter-brained." (Fig. 1.)

Miss P. J—, fourth daughter (born 20.vii.1931).

The condition of the hair and nails is the same as that of her two sisters. Alopecia in the area of the crown was first noticed about 18 months ago (at age 19 years). There are, however, a few black hairs on the eyebrows. Both eyebrows and eyelashes were normal until the age of five years. The skin is normal. This patient had illegitimate twins on 18.v.1950. One died at birth and the living twin has normal auburn hair. The patient is undoubtedly of low mentality and conversation is difficult. She is moody and has not been employed, but recently has helped with the housework for her father, mother (dying of cancer) and child. Her sisters say she is incapable of any responsibility and "very difficult to live with."

Mr. R. H. J—, third son (born 21.x.1926).

The scalp hair is black, wiry, and stands on end when ruffled. The crown area is bald and the margins are very high. The eyebrows and eyelashes were lost at the age of four years, and are now sparse. There are a very few hairs on the pubes and in the axillae, but there is no other body hair. Likewise, there are a few scattered hairs on the upper lip and chin but none on the rest of the beard region, so that shaving once weekly is sufficient. The nails are short and fragile, but the skin is normal. This patient has extremely severe congenital idiocy with very dirty habits, and has been maintained in a mental hospital since the age of 15 years.

Mr. J—, father (born 27.xi.1889).

The condition of the scalp is identical with that of his son, R. H. J—, except that there is more extensive alopecia of the crown and mid-frontal areas. He lost his eyebrows and eyelashes at the age of six years and now has complete alopecia of these areas. There is almost complete alopecia of the beard region, and apart from removing a few hairs from the upper lip weekly he has never shaved. There are a few long hairs in the axillae and on the pubes, but no other body hair. The nails are short and fragile, but the skin is normal. His general health is very poor: he has severe paralysis agitans with gross illusions and feelings of persecution. He is no longer able to work.

Other Members of the Family.

As far as can be gathered from clinical examination, inspection of family photographs, and direct questioning of the mother and father, all the other members of the family are normal. The mother was particularly helpful in providing this history. The mother, the eldest daughter and her two children, the eldest son and his child and Miss P. J—'s daughter have auburn hair which is quite normal. The second daughter has dark hair which is said to be normal. There is no history of the defect on the mother's side of the family, and careful questioning failed to reveal any member of the father's side who is, or might have been, affected.

Microscopy.

Microscopically, the hairs from the various affected members of this family showed the same structural defect. At first it was thought that only a few hairs showed

twisting and that others showed irregular beading, but when the dark colour of the hair was overcome by careful focusing of the microscope, lighting and filtering arrangements, it was seen that all these hairs showed some variety of twisting. A number of perfectly normal hairs were also found. The twists were regular in form and in arrangement. For the most part there were twists through 180° , but one close twist through 360° and a few through 90° were seen. Occasionally there were

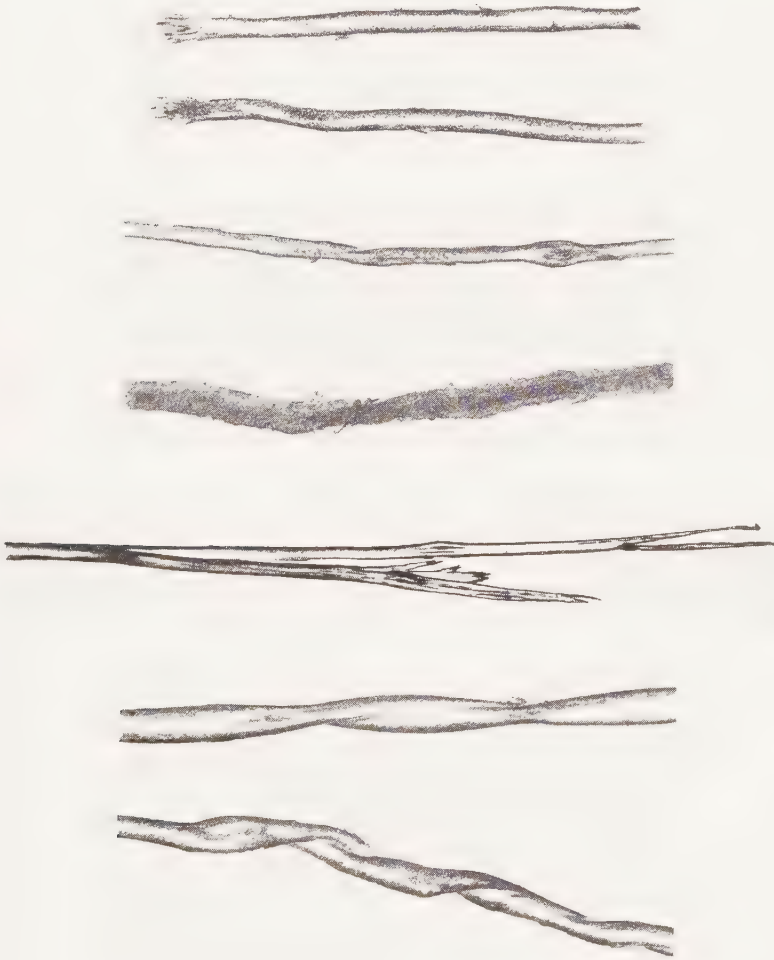


FIG. 2.

4 or 5 twists arranged close together, while at other times a gentle twist was seen. In all cases the twists were clockwise or right-handed (Fig. 2). All the twisted hairs were very darkly pigmented and the hair matrix was only occasionally seen, whereas the normal hairs found were lighter in colour. The cross sections appeared to be oval. There were many trichorrhexis nodosa lesions, and occasional hairs showed splitting as evidence of excessive fragility (Fig. 2). Only occasionally was it possible to identify a twist with the naked eye.

DISCUSSION.

The classical picture of pili torti, as judged from the literature of previously reported cases, is that of a congenital and perhaps hereditary pilar defect occurring most often in female children and usually noticed early in life. The affected children are usually born without hair, but the abnormal hairs appear when the child reaches the age of about 18 months or 2 years. The majority of affected patients have had blond hair. Occasionally, when only a proportion of the hairs were twisted, these were of lighter colour than the adjacent normal hairs. The hairs are excessively fragile and areas of alopecia or partial alopecia occur, usually on the occiput and crown. Eyebrows and eyelashes are frequently affected or they may be absent. Body hair is usually normal. There is often associated pityriasis capitis, or keratosis pilaris. The prognosis would appear to be favourable, the majority of children acquiring normal hair at about the age of puberty. Intelligence and mental development are usually quite normal.

Scott (1950) described an unusual variety of pili torti where twisted hairs seemed to follow an injury to the scalp and were localized to the area of the injury. His patient was a girl of 11 years.

If we exclude Ullmo's two possible cases and the present five, all six of the cases reported since Hellier estimated the sex incidence at 19 females to 8 males have been girls, making the present estimate 25 : 8. In this family the father, one son and three daughters are affected.

The familial tendency has been noted before. Touraine *et al.* (1938*b*) reported a mother, her two daughters and three sons with the condition, and Franchi (1934) reported three brothers who were affected. Rygier-Cekalska (1935) reported twins. Navarro Martin (1938) reported brother, sister and their aunt and uncle. Touraine and Golé (1937) reported mother and daughter.

A few of the reported and accepted cases have had brown or even black hair (Martin's cases; the mother of the family reported by Touraine and Golé; Schlamadinger's case (1938); and possibly the case reported by Pierini and Borda (1947)). The affected members of the present family have jet-black hair.

The condition has been reported in adults (the patient described by Rihova (1929) was aged 32 years; Schlamadinger's patient was 39—a doubtful case; the mother of Touraine and Golé's family; the mother of the family reported by Touraine *et al.* (1938*b*) was 44; the patient reported by Touraine and Duperrat (1945) was 48). The present cases are aged 18, 21, 23, 26 and 62 years.

The eyebrows and eyelashes have usually been normal in those cases recorded to date, but there have been exceptions (Ronchese's case had scanty eyebrows and eyelashes; the case described by Ormsby and Mitchell had absent eye-

brows : Hellier's case had twisted hairs on the eyebrows : Appel and Messina's (1942) case also had twisted hairs on the eyebrows : Björnstad's (1941) case had no eyebrows : the youngest child reported by Touraine *et al.* (1938*b*) had scanty eyebrows and eyelashes). In the present family the eyebrows and eyelashes are scanty or altogether absent.

There are, however, three features present in this family which are unusual. One is the absence or sparsity of body hair, but in this respect it should be pointed out that some of the case reports are noticeably incomplete and again, of course, most of the cases previously reported have been children. The second feature is the presence of the mental peculiarities which occurred in all five of our patients in varied degree. Ronchese's patient was said to be slightly below normal intelligence. The third feature is the absence of any tendency for the condition to improve after puberty. The presence of associated mental deficiency is not unduly surprising in a condition which is essentially an ectodermal defect.

Ullmo recorded two case reports under the title "Un nouveau type d'agénésie et de dystrophie pileaire familiale et héréditaire." Her two patients, who were brother and sister, had jet-black hair of wiry texture on the periphery of the scalp with alopecia of the vertex, abnormally high scalp margins, and complete absence of eyebrows, eyelashes and all body hair. Both Ullmo's cases were adults, and it is thought that the father and paternal grandfather had the same pilar defect. The photographs of Ullmo's cases show that the condition present was strikingly similar to that of the present family. To add to this similarity, her two patients were mentally defective.

Unfortunately, owing to lack of co-operation from the patients, Ullmo was not able to obtain specimens of hair for microscopic examination, nor to re-examine her cases at a later date (Ullmo, 1952), but from the available evidence the resemblance is so great that one feels that these two families have the same type of congenital defect.

SUMMARY.

An unusual pilar defect, differing in certain respects from the classical form of pili torti, but with many resemblances, and associated with mental deficiency, is described.

It is thought that this particular defect may allow of the closer integration of pili torti with other ectodermal deficiencies. The present defect would seem to be of exactly the same type as that recorded by Ullmo.

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TINEA IMBRICATA IN A EUROPEAN: DOUBLE INFECTION WITH *TRICHOPHYTON CONCENTRICUM* AND *TRICHOPHYTON RUBRUM*.

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CLINICAL DESCRIPTION.

Mr. W—, a 23-year-old officer in the Malayan Police, flew home to England on leave with an eruption which he knew to be *tinea imbricata*.

He was sent for consultation with Dr. M. Sydney Thomson, who kindly allowed me to see the patient and to obtain material for mycological examination. At our first meeting it was unfortunately only possible to take a brief history and to carry out a rapid clinical examination; however, owing to the evil repute of the disease it was thought that there would be ample opportunity for photography and other investigations at a later date. The eruption had been present for nine months, involving the hands, arms, trunk, thighs and legs; since arriving in this country two weeks previously it had not altered. In Malaya he had tried most of the usual fungicides without effect, and although irritant the rash had never been a severe disability.

His native labourers, of whom he had seen many attacked by the disease, seemed but little disturbed by it, contrary to the classical description in which they are said to curl up in their compounds miserably disinclined to work (a state, he remarked, not unnatural to them at any time).

On examination a widespread and pleomorphic eruption was present on the right palm, both upper arms, chest, back, abdomen and right thigh. On the right palm it consisted of three rings about 3 mm. wide and 3 cm. in diameter of somewhat dusky erythematous appearance, not scaly unless scraped, and giving the impression of being situated quite deep in the epidermis and perhaps a little infiltrated. No vesiculation was present and the centres of the rings appeared normal.

Elsewhere the eruption varied from tissue-papery, easily detached scales scattered at random in sheets, to definitely concentric, arcuate and serpiginous patterns of typical imbricate scales giving the classical sign of roughness when stroked from within the lesions outward. These signs were present especially on the back and thigh. The appearance was nowhere so spectacular as in the paintings of natives shown by Castellani (1928) and reproduced in some text-books, but was nevertheless quite easily diagnosable as *tinea imbricata*. The patient stated, when shown such pictures, that they in no way exaggerated the eruption as seen in natives of Malaya.

The nails and hair were unaffected.

Numerous scales were taken from the body lesions and the results of their examination are described later.

Treatment.

As he was to be out of London for several weeks he was advised to use the two following agents on alternate weeks, applying them to the whole body twice daily:

(1) Ung. acid. benzoic. co. (B.P.C.) (Whitfield's ointment).

(2) This lotion: Salicylic acid, 2 drachms (3.0 g.); copper nitrate, 20 grains (0.5 g.); acetone, 2 fl. oz. (25 ml.); methylated spirit to 8 fl. oz. (100 ml.).

Progress.

When I saw him nine weeks later I was considerably surprised to find him almost normal, the only remaining lesions being (i) a minor degree of superficial scaling of the right palm and wrist; from this it was still possible to isolate *T. concentricum*; (ii) An area of depigmented but otherwise clinically and microscopically normal skin in the site of the former lesions on the back; (iii) a macerated fissure in the outer interdigital space of the left foot. This contained mycelium, but numerous cultures remained sterile on two occasions.

The trichophytin test was negative at dilutions of 1 in 10 and 1 in 100 (Burroughs Wellcome & Co.: Batches K 1752 and 1753).

The glucose tolerance curve was normal.

MYCOLOGICAL INVESTIGATION.

Owing to the reputed difficulty of isolating *T. concentricum* many scales were taken at the first visit. On examination in potash or after staining these scales showed extremely heavy invasion by branching and interlacing hyphae with numerous arthrospores.

For culture half the scales were placed for five minutes in alcohol as often recommended, but all these remained sterile. The remainder were placed at once on slopes of Sabouraud's glucose agar, malt extract agar and malt extract tellurite agar; some were also placed in tubes of dextrose broth with and without penicillin 50 O.u. per ml. and aureomycin 50 µg. per ml. All the above cultures were set up both at 22° C. and 37° C.

Two tubes of Sabouraud's medium and one of malt extract agar at 22° C. grew colonies which were grossly and microscopically typical of *Trichophyton rubrum*, with profuse production of diffusible deep red pigment, and the usual microconidia and cylindrical thin-walled macroconidia on slide culture.

I failed to isolate *Trichophyton concentricum* on solid media, but growth was obtained in one tube of broth at 22° C. and in two at 37° C. At 37° C. in four days and at 22° C. in seven days the scales were obviously shaggy. One of these scales was examined microscopically at six days and showed profuse growth of a rather coarse branching mycelium with numerous chlamydospores. While one could not make a definite diagnosis on this appearance alone, it was such as to be very suggestive of a faviform trichophyton, and unlike the common dermatophytes or contaminants grown under similar conditions. The remaining scales were left for two weeks, by which time they had developed into 3- to 5-millimetre fluffy balls, some with chains of 1- to 2-millimetre colonies attached by delicate short mycelial threads. There was no apparent difference between the tubes with and without antibiotics, for none of the latter grew obvious bacterial contaminants. Growth was a little more rapid at 37° C. than at 22° C. Similar results were obtained at the patient's second visit, except that *T. rubrum* was not isolated.

The broth colonies were divided into fragments of convenient size and rubbed over the surfaces of tubed slopes of the solid media named above. Nothing

appeared to happen for ten to fourteen days, after which interval the original inocula increased in size and the slopes showed varying numbers of pin-head white colonies; sheeted growth was never obtained. All these increased during a further three or four weeks, by which time they reached maximum size, this being related to the size of the original inoculum. The most satisfactory growth was obtained on Sabouraud's glucose agar. On this medium at 22°C. in cotton-wool-plugged test-tubes, in screw-capped universal containers, or on plates with equal readiness, colonies reached 10 to 15 millimetres in diameter in five to six weeks, not increasing in size or altering morphologically on longer incubation.

The colour was a dirty white or cream. No diffusible pigment was produced, but some colonies showed a small amount of localized brown pigment on the

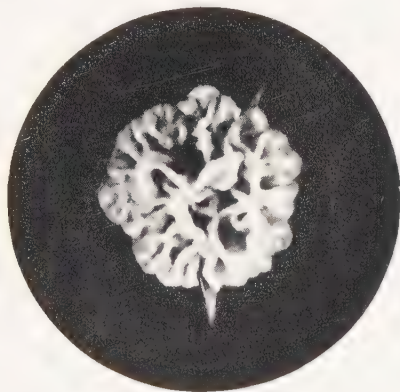


FIG. 1.—A faviform colony (6 weeks). Actual size.

reverse. The colonies were elevated—often they were as high as broad—with deeply folded cerebriform surfaces (Fig. 1). No duvet appeared at 22°C. except on prolonged incubation after six or eight subcultures. These colonies were not solid as they at first appeared, but hollow like little tents, and on removing the wall a drop of water was often found inside. The medium was penetrated 2 to 5 millimetres according to the thickness of the slopes. After six weeks or more the medium was usually deeply fissured, and this appeared to be more than a simple result of drying.

On beer-wort or malt-extract agars smaller solid mealy colonies without folding were obtained, though a number of inocula failed to grow at all. Sabouraud's preserve, cornstarch, potato-carrot and blood-agar produced variable appearances, but were all inferior to Sabouraud's glucose agar. Thiamin, pyridoxin, vitamin B₁₂, inositol and crude liver extract were added singly and in combinations to the normal medium without altering the rate of growth (Georg, 1951). Further work on the growth requirements of *T. concen-*

tricum, using special media (Georg, 1950), is being carried out in the Department of Mycology, Institute of Dermatology, London, and will be reported later.

A very remarkable difference was readily noted in colonies grown in rubber-plugged test-tubes or in tightly capped universal containers at 37° C. This was not obtained at 22° C. either when the tubes were tightly plugged or darkened, or both, nor in loosely plugged tubes at 37° C. even when sterile water was added at intervals to prevent drying. It was therefore thought to be due to high moisture content, to the higher temperature, to semi-anaerobic conditions, or perhaps to a combination of these factors. Such colonies grew like the commoner dermatophytes (Fig. 2). They reached a size of 15 to 20 millimetres or more, developed bosses, sometimes concentric rings and radial furrows, and a peripheral fringe of fine mycelium like that round microsporum colonies.



FIG. 2.—An endodermophyton-like colony (6 weeks). Actual size.

They were not much elevated above the surface of the medium. Most striking was the colour, varying from a deep primrose yellow to a vivid orange brown. No diffusible pigment was produced.

On subculture these different colony types could be changed from one to the other as often as desired by altering the conditions of growth appropriately. The colour could be largely discharged by exposure for a few days to indoor daylight. Under Wood's light no characteristic or brilliant fluorescence was noted, but some of the coloured colonies showed a dull lavender at the periphery.

Microscopical appearances were broadly similar under all conditions of growth. The mycelial articles were short, and broken up by innumerable chlamydospores. At the edges of colonies on solid media, and more obviously in broth, the growing ends of the hyphae branched to form three or four pronged figures, but not classical antler hyphae. The hyphae were longer and the chlamydospores less numerous in liquid than on solid, especially maltose, media. On the latter growth sometimes seemed to consist solely of chlamydo-

spores. No conidia were found in more than a hundred cultures of various ages obtained from five primary isolations. The compact nature of the growth on solid media made the preparation of elegant needle mounts very difficult.

Slide culture was unsatisfactory. Even when successful steps were taken to prevent drying of the agar block the growth invariably remained small and compact, remaining on the medium and leaving nothing for examination on the slide or coverslip. Animal inoculation was not undertaken. I felt disinclined to inoculate myself or others with this unpleasant fungus.

DISCUSSION.

One hesitates to write at length on isolated cases. However, double dermatophyte infections are often considered rare enough to warrant publication, and this is an unusual combination.

The lesions produced on the body by *T. rubrum* are notoriously variable and often trivial; here the fungus appeared to be intimately mixed with *T. concentricum* in the same lesions.

Tinea imbricata is seldom seen in temperate climes, although with the large numbers of United Nations troops at present in an endemic area it may be encountered more frequently in the future. Apart from Castellani's (1933) cases there are few adequate clinical and mycological descriptions of this disease available in the British and North American literature.

Castellani (1928) placed *T. concentricum* in a special genus *Endodermophyton*, and distinguished four species mainly by their geographical and pigmentary characters. Study of the strain here described showed it to be capable of producing, under special conditions, a pigment like that of Castellani's *E. indicum*. It is, of course, possible that all his strains would prove identical if grown on normal media under standard conditions.

The available text-books give brief and remarkably similar accounts of the fungi of this group, suggesting that there is room for much original work to be done.

SUMMARY.

1. A case of *tinea imbricata* in a European is described.
2. This case did not prove entirely resistant to treatment.
3. Both *T. concentricum* and *T. rubrum* were isolated from the same lesions.
4. The cultural and microscopic characters of a strain of *T. concentricum* are described.

ACKNOWLEDGMENTS.

I should like to thank Dr. M. Sydney Thomson for showing me this patient, and Mr. W. Smith for the photographs.

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TINEA IMBRICATA IN MALAYA.*

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THE report by Sharvill (1952) of tinea imbricata in a white man who had had contact with Malayan aborigines, and from whose lesions *Trichophyton concentricum* and *T. rubrum* were isolated, prompts me to describe the disease as it occurs in Malaya.

Castellani (1919) thought that the Malay Peninsula was the original home of tinea imbricata, from which it spread east, north and west. I have, however, been unable to find any description of the disease as it occurs in Malaya.

RACIAL INCIDENCE OF TINEA IMBRICATA IN MALAYA.

In Malaya tinea imbricata is virtually confined to the aboriginal tribes. These tribes form about 1% of the population, and are widely scattered throughout the country in isolated communities of about 25–150 souls. There are three main racial types, the Negritos, the Senoi ("Sakai"), and the Malay-like aborigines. They are distinguished from the other peoples of Malaya by their primitive customs and technology, their pagan religions, the absence of a written language and their nomadic tendencies.

Table I gives the incidence of the disease in several communities numbering in all 581 aborigines of the three main racial types who were examined as part

TABLE I.—DATA ON FUNGAL SKIN DISEASES IN MALAYAN ABORIGINES.

Name of tribe.	Racial type.	Territory inhabited, latitude and longitude.	Nature of habitat.	Total number examined.	Number with tinea imbricata, with percentage incidence in parentheses.	Number with tinea circinata.	Number with pityriasis versicolor.
Semai . . .	Senoi	Ulu Jelai, Pahang, N. 4° 20', E. 101° 45'	Forest clearings below 600 ft. above sea-level	171	17 (9.9%)	5	15
Semai . . .	"	Ulu Jelai, Pahang, N. 4° 30', E. 101° 30'	Forest clearings more than 2500 ft. above sea-level	178	33 (1.7%)	1	10
Lanoh . . .	Negritos	Upper Perak, N. 5° 20', E. 101°	Forest camps below 500 ft. above sea-level	164	30 (18.3%)	10	4
Orang Seletar ¹	Malay-like	Straits of Johore, N. 1° 20', E. 103° 30'	On the edges of mangrove swamps	68	3 (4.4%)	0	3
Total . . .				581	53 (9.1%)	16 (2.8%)	32 (5.5%)

¹ Only about 50% of the members of this community were examined.

* The term Malaya is used to denote the Malay Peninsula.

of a general survey of Malayan aboriginal diseases to be published later. 99% of the members of each community studied were examined, and the communities were chosen without reference to the incidence of fungal skin disease.

Tinea imbricata was found in 9.1% (53/581) of these people. I think that this figure is fairly representative of Malayan aborigines as a whole, although it is common to find aboriginal communities without a single case of the disease.

In three years' experience I have seen only one case of *tinea imbricata* in a non-aboriginal in Malaya. This was a Malay countryman who lived within three miles of the infected Orang Seletar who are mentioned in Table I. Discussions with Malays suggest that the disease was formerly common among the Malays, a literate Mohammedan rural people who call it *Kurap losong*. Prof. E. S. Monteiro tells me that the disease was seen before the Second World War among Chinese dock labourers in Singapore, whose infection probably came from China. It is interesting to note that the source of infection of all of the many cases seen by Manson (1878) in Amoy, China, could be traced back to the Straits of Malacca (i.e., Malaya), or the Malay Archipelago. The one case Manson described in detail was infected by a Southern Chinese in the Straits.

In several other countries of Asia *tinea imbricata* appears to occur principally in the aboriginal peoples. Acton and Ghosh (1934) found a single case in an inhabitant of the Mymensingh district of Bengal, who was thought to have been infected by hill tribes said to suffer from the condition. Dey and Maplestone (1942) report that the disease occurs in the hill aborigines of Assam. It was rare in the immigrant plainsmen, occurring only among those who had had contact with the aborigines.

I have questioned residents of Borneo, the Philippines and New Guinea, who all told me that they remembered seeing the disease only in the aboriginal peoples of those islands. Nieuwenhuis (1898) states that in Indonesia it is principally a disease of indigenous peoples, but mentions its occasional occurrence in white men.

AGE AND SEX INCIDENCE.

The incidence of *tinea imbricata* in the aborigines in Table I was 9.1% (29/319) in males, and 9.2% (24/262) in females.

Castellani (1919), writing of Ceylon, states that men are much more frequently affected than women, and that young adults are the most commonly affected age-group.

The incidence of *tinea imbricata* in the first seven decades of life is as follows :*

0-9 years 4.8% (8/166), 10-19 years 12.1% (15/124), 20-29 years 4.9% (3/61), 30-39 years 7.4% (6/81), 40-49 years 21.3% (10/47), 50-59 years 11.3% (6/53), 60 years and over 10.2% (5/49).

* Ages are only approximate, since the aborigines do not know their ages.



FIG. 1. Skin of back of Negrito baby. Concentric rings of desquamating skin can be seen, inside each of which the skin is depigmented. From one or more foci the disease may spread to involve almost all the body.



FIG. 2. The shoulder of a "text-book" case of *tinea imbricata*, showing concentric rings of desquamating skin exceptionally clearly for an advanced case. This subject did not itch or scratch. The skin of the nipple is involved.

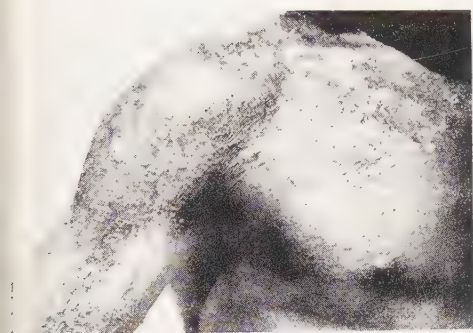


FIG. 3.—The condition usually irritates and is itched, destroying the concentric rings and producing lichenification.

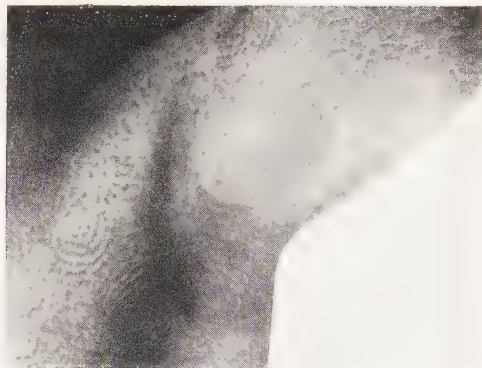


FIG. 4. The axilla (and groin) are usually, but not invariably spared. Note the depigmentation as shown by the darker coloration of the unaffected axilla.



FIG. 5. The scalp, contrary to what is sometimes stated, can be affected.

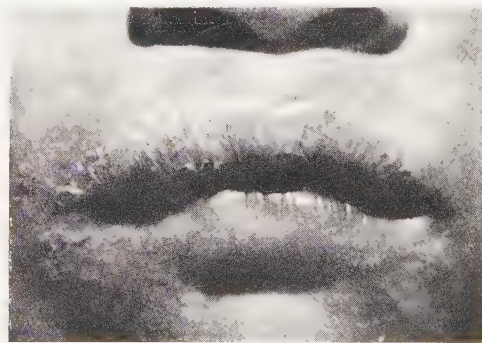


FIG. 6.—The lips, face and nipples can be affected, but the lesions are not so obvious on thin skin, as the scales are easily removed.



FIG. 7. Lesions are produced on the palms and the finger-print pattern may be obscured or temporarily destroyed, producing a condition indistinguishable from the palmar lesions of yaws.

The disease does not therefore seem to show a predilection for any special age-group.

DESCRIPTION AND DISTRIBUTION OF THE LESIONS.

Tinea imbricata produces a series of concentric circles of desquamating skin. Desquamation takes place from within outwards, producing scales which are adherent peripherally, with their free borders towards the centre of the circle. Within each ring of scales there is a circle of hypopigmented skin, and within this a ring of normally pigmented skin. Mild erythema can sometimes be seen in a pale individual. Such a regular appearance is best seen in the initial lesions (Fig. 1), as the arrangement later becomes complicated owing to interference between rings of desquamation arising from adjacent centres. Rings of desquamation do not cross one another, as can be seen by examining the skin lateral to the nipple in Fig. 2. The lesions in Fig. 2 are unusually regular for an advanced case. This was because the eruption did not itch, and was therefore not scratched. The lesions usually irritate, and the ensuing scratching leads to lichenification (Fig. 3), which obscures the original concentric pattern. In extensive cases some lichenification can usually be seen.

Tinea imbricata tends to be located on the more prominent parts of the body. Though most of the trunk may be involved the slightly protected midline, both in front and behind, tends to be spared. Part of the axilla (Fig. 4) and groin almost always remain unaffected. The scalp is sometimes affected, especially by spread upwards from the back of the neck (Fig. 5). The hair in affected regions appears normal. The only part of the body surface which I have not seen involved is the front of the scalp.

Like many skin diseases, *tinea imbricata* shows regional differences in morphology which are related to differences of skin thickness. On the face and lips (Fig. 6), the nipple and the axilla the delicate scales are often removed. In these areas the presence of the disease may be most readily indicated by the depigmentation it produces. On the palm (Fig. 7) and sole the concentric arrangement is poorly shown and there may be temporary destruction of finger-print pattern. Unlike many authors I have not seen lesions of the nails. In a single extensive case of *tinea imbricata* fungal hyphae were found by microscopical examination of scales from the general body surface, scalp, lips, face and palms.

DISCUSSION.

There has been little study of *tinea imbricata*, for it occurs far from the centres of dermatological research. Its concentric lesions provide a remarkable example of periodicity of a pathological process in space and time. If the cyclical variations of skin morphology are paralleled by variation in form or quantity of the causative organism it is probable that there is a refractory zone within the zone of desquamation. This is suggested by the observation

that zones of desquamation and depigmentation do not cross. Manson (1878) believed that the periodicity of the lesions was due to the periodic removal of the layers of the skin in which the fungus grows, followed by its regeneration. Castellani (1934) remarked on the paucity of hyphae in the live skin compared with its abundance in the desquamated skin.

The racial distribution of *tinea imbricata* in Malaya is unlike that of the other dermatomycoses and raises interesting problems. A dry lichenified *tinea circinata* is common among the Asian races, as is pityriasis versicolor, while those who do not wear shoes appear free from *tinea pedis*. The white man often finds that his *tinea pedis* is aggravated, and he may develop an intertriginous mycosis elsewhere. As Acton and Ghosh (1934) have pointed out, the irregular distribution of *tinea imbricata* is probably related to the narrow range of environmental conditions under which the causal organism will grow. *Tinea imbricata* occurs in all the main aboriginal peoples of Malaya, including the Malay-like aborigines of the south, who have been one of the main sources of origin of the Malay population. The Malays do not suffer from the disease and so genetic factors are thought to be unimportant. Geographical factors can be dismissed, since affected aboriginal groups are often found sandwiched between unaffected populations of other races.

The causes of the liability of Malayan aborigines to *tinea imbricata* should be sought in their customs and way of life. It is not yet, however, possible to say which features of the environment provided by the aborigines' skin make it suitable for the growth of the delicate *Trichophyton concentricum*.

SUMMARY.

(1) *Tinea imbricata* is common in each of the three main types of Malayan aborigines and is widely distributed through the Malay Peninsula. 9.1% of 581 aborigines of both sexes and all ages examined during a disease survey had the disease.

(2) It is extremely rare in other races in Malaya, but may have been more common formerly.

(3) No sex or age group is specially susceptible to the disease.

(4) The clinical condition is briefly described and illustrated. Infection of all the body skin except that over the front of the scalp was observed.

(5) The regular arrangement of concentric circles of desquamating skin is preserved in advanced cases who do not itch or scratch. More often the lesions are scratched, lichenification develops and the regular pattern is obscured.

ACKNOWLEDGMENTS.

Among those who have helped in this work, I would like especially to thank Maj. P. D. R. Williams-Hunt, Adviser on Aborigines, Federation of Malaya, and Che Mohammed Yusoff bin Haji Abdul Rahman, a member of his staff.

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PHENOMENA OCCURRING ON THE FACE IN CASES OF FAVUS.

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I WISH to draw attention in this article to a phenomenon that I have found in 70% of cases of long-standing favus, which I have examined during 1920-1951 in the dermatological department of the Royal Teaching Hospital, Baghdad. The Hospital has an average yearly attendance of 420 favus cases, the majority of which are of long standing. Difficulty is met in trying to take proper case-histories, as the patients, being mostly tribesmen, illiterate and uneducated, are of low mental power.

Description of the phenomenon.—Apart from the familiar signs of favus, the patient displays a strikingly penetrating look in his eyes, which are usually deeply set in their sockets, under huge long eyebrows and eyelashes. This appears to develop four to six years after the onset of the disease, differing from patient to patient, and it seems to be more accentuated in more advanced cases. In some of the cases, thick long lanugo hairs appear on both sides of the forehead, extending from above the eyebrows up to the frontal hair margin.

The whole phenomenon is well demonstrated by photographs of the two patients whose case-histories are given below.

CASE 1 (Fig. 1).—M. M—, male aged 14, a tribesman, reported to hospital complaining of lesions on the scalp with falling of hair since childhood. No treatment had been applied. The lesion had gradually spread over a large part of the scalp, and several areas had become devoid of hair.

On examination there were sulphur-yellow cup-shaped scutula on the frontal, temporal and occipital regions. Few dull easily extractable brittle hairs were found on the lower parts of both temporal and occipital regions. Thick lanugo hairs were present on both sides of the forehead, extending from the eyebrows up to the frontal hair margin. The skin of the bald areas was cicatricial. No mycotic skin lesions were found over the rest of the body. Mycological examination showed the presence of *Achorion schoenleinii*. On observing the face it was impossible to overlook the fact that the patient had a sharp penetrating look in his deeply set eyes. The eyeballs were somewhat distended, but on palpation no increase in intraocular tension was felt. The eyebrows were thick, black and long—some as long as $1\frac{1}{2}$ in.; similarly the eyelashes, which were as much as 1 in. in length.

CASE 2 (Fig. 2).—J. N—, aged 16, a tribesman, reported to the hospital complaining of lesions on the scalp which had appeared eleven years ago. No treatment had been applied. The lesions had started on the vertex, then spread over different parts of the scalp.

On examination few scutula were present on different parts of the scalp; there were patchy cicatricial atrophic bald areas on the frontal, parietal and temporal regions, and diffuse alopecia with dry lustreless brittle hairs over the occipital region.

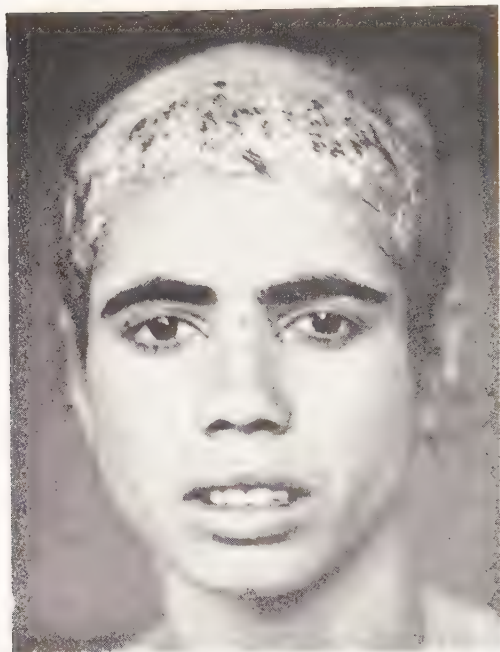


FIG. 1.

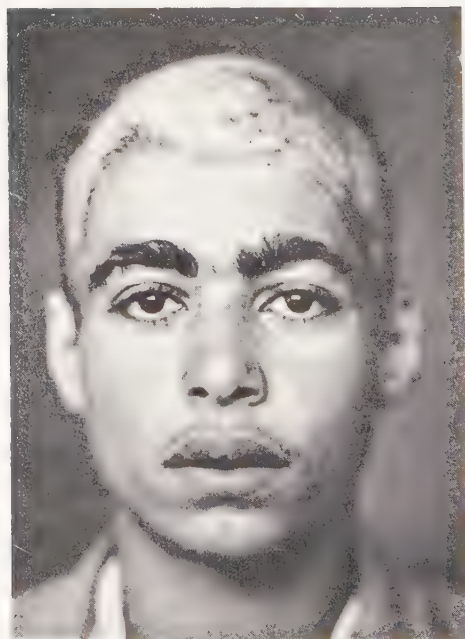


FIG. 2.

No mycotic skin lesions were found elsewhere. Mycological examination showed the presence of *Achorion schönleinii*.

There was the same peculiar sharp penetrating look in the patient's eye ; the distended eyeballs, with normal intraocular pressure ; eyebrows and eyelashes, black, thick and long, as long as $1\frac{1}{2}$ in. and 1 in. respectively.

DISCUSSION.

The first question that arises in these cases is whether the phenomenon can be attributed to favus. In order to answer this, we must first of all try to decide whether it was present before the onset of the disease. The answer must come from the patients, and of this we can never be sure.

I must again emphasize the fact that the majority of the patients are tribesmen, and it is practically impossible to get from them proper case-histories. It is possible that, for some reason or other, they might attribute a great many signs to the disease which actually have nothing to do with it. Owing to ignorance and neglect, a great many patients come for treatment only after the disease has become far advanced, and even after that, having received the routine treatment, they never appear again. Thus our period of observation is bound to be confined and restricted to the two to three months during which they attend the out-patient department.

Of the patients attending this department, only the favus cases exhibited this phenomenon. Early favus did not show it, but 70% of advanced cases, i.e., of more than four to six years' history, definitely did show a penetrating look, deep-set eyes and huge eyebrows and eyelashes, and a few cases had thick, long lanugo hairs on sides of the forehead as well. The degree of accentuation differed from person to person, according to age ; more marked in older patients and less so in relatively earlier ones. During the two to three months' period of treatment and cure of the infection no change in the phenomenon has been noticed. No long-term follow-up has been possible.

Taking all these facts into consideration, the only inference which could be made is that this phenomenon must be related to advanced favus ; that it develops gradually, and therefore it is very likely that it is due to a continuous toxic action of the fungus.

KERATODERMIA BLENNORRHAGICA TREATED WITH CORTISONE.*

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THE favourable reports on the use of cortisone in Reiter's syndrome decided us to try this treatment in a desperately ill patient with keratoderma blennorrhagica not responding to routine treatment.

The patient, a young white male of 26, one month after untreated gonococcal infection developed fever of 103-104°, urethritis, conjunctivitis, extensive swelling of his hands, elbows, feet and knees, and the typical skin lesions of keratoderma blennorrhagica. The urethral smears following prostatic massage were repeatedly positive for gram-negative intracellular diplococci and similarly these were found in the smears obtained from pustules and fluid aspirated from the right knee. Blood cultures were sterile.

For three and a half months the patient was treated with massive doses of penicillin, streptomycin, aureomycin, sulphonamides and topical skin applications, with no benefit. He was unable to move because of painful joint swellings and was going rapidly downhill with fever and wasting. Eventually all treatment was discontinued and the patient was started on cortisone for a period of three months.

In the first month of cortisone medication the patient gained weight, the elevated temperature subsided, his urethritis and conjunctivitis disappeared and the joints were less painful and swollen. In the second and third month of cortisone treatment the inflamed and swollen joints further improved, the skin pustules disappeared and the keratoderma gradually cleared up; the keratotic lesions of the palms and soles were the last to go.

Orthopaedic treatment was carried out for one month after the cessation of cortisone therapy, and the patient was sent home cured of the disease, but handicapped by considerable joint deformities.

* Presented at the ACTH and Cortisone Conference, Toronto, 19 April 1952.

CURRENT LITERATURE.

BEPANTHEN IN ERYTHEMATODES. P. KELLER. (1952) *Derm. Wschr.*, **125**, 243.

Bepanthen is not pantothenic acid itself but the corresponding alcohol. It can be administered as 100 mg. tablets, 500 mg. ampoules, or a 5% salve. The author gave a Bepanthen tablet thrice daily to 3 patients with chronic superficial lupus erythematosus. Improvement was dramatic in all patients, and was enhanced in two by the addition of Spiroside 0.25 g. as a tablet thrice daily for 3 days with a 3 days' pause. Patches previously resistant to treatment almost completely cleared within 1-4 months with Bepanthen alone or, as in two patients, combined with Spiroside. M. S. S.

THE TREATMENT OF PSORIASIS WITH UNDECYLENIC ACID. K. KÖRBER. (1952) *Derm. Wschr.*, **125**, 193.

In this investigation 42 patients with psoriasis were given gelatine capsules containing 0.44 g. undecylenic acid in daily increasing doses of 1 to 30 capsules (14 to 4468 in all).

No benefit was noted; 5 relapsed under treatment. Gastro-abdominal discomfort and sweat gland abscesses were among the side effects. The use of nonylenic acid in 5 patients was equally valueless. M. S. S.

CAPILLARY ABNORMALITY AND CLINICAL BEHAVIOUR IN ULCUS CRURIS. A. LUGER. (1952) *Derm. Wschr.*, **125**, 195.

The author has devised a method of recording statistically abnormalities found with the capillary microscope in the arterial and venous capillaries of the leg in patients suffering from varicose ulceration. He tabulates these findings, comparing them with the rate of healing of the ulcer, "the healing quotient," also recorded statistically, and can find no relationship between the two findings. He suggests that circulatory derangement leads to overloading of the area with histamine-like substances. This paralyses the capillaries. Intracutaneous skin tests support this: with histamine a refractory reaction being reported and with adrenalin a great reduction in the white reaction as a rule. M. S. S.

SUDORIFIC ACTION OF ADRENALIN ON THE HUMAN SWEAT GLANDS AND DETERMINATION OF THEIR EXCITABILITY. M. WADA. (1951) *Internat. J. Leprosy*, **19**, 334.

The pores of functioning sweat glands were demonstrated by applying a starch-castor oil mixture to skin previously painted with a weak alcoholic solution of iodine. Using this technique adrenalin hydrochloride was found to have a local sudorific action when injected intradermally in 1/1000 to 1/10,000 solution. H. T. H. W.

RECKLINGHAUSEN'S DISEASE, A FORME FRUSTE WITH OCULAR AND BUCCAL MANIFESTATIONS. G. BASOMBRIO, J. A. BADÍA, C. V. COLUMBO and J. E. CARDAMA. (1951) *Rev. argent. Dermatosisif.*, **35**, 217.

A woman, aged 23, with a somewhat acromegalic appearance, complained of conjunctival irritation and a lifelong inability to shed tears, and for the last 6 years a great swelling of the lips on rising which in a few hours had reverted to normal. The eyelids were thickened, particularly at the free border, and sufficiently heavy to make them droop and give an appearance of ptosis, though movements were normal. The bulbar conjunctiva near the cornea was slightly reddened, and thickened with yellowish white strands, some of which crossed the limbus into the cornea. Lacrymal secretion was scanty. The lips were thickened but of normal consistence. On the inner side of the lips and cheeks were sessile lenticular elements covered with normal mucous membrane. Histological section of pieces removed from the mucous membrane, an upper eyelid and strands of conjunctiva showed neurofibromatosis. The skin elsewhere was normal. G. W. B.

STUDIES ON MELANIN. MINOR ITO. (1952) *Tohoku J. exp. Med.*, **55**, Suppl.

This book contains an account of several years' study on pigmentary disturbances carried out by the author and his staff at the Tohoku University Medical Faculty. Much of the work has been published in various journals previously, but the reports are now brought together and several illustrations have been added.

The author considers that the naevus cells of pigmented naevi originate from the Schwannian cells of peripheral nerves, as has been shown by Masson as part of his theory of naevus formation, and believes there is sufficient evidence to rule out the Abtropfung theory of Unna. The melanoblasts of Mongolian spot and blue naevus he confirms as mesenchymal in origin and closely associated with the nervous system. Similarly the melanoblasts of naevus fuscocaeruleus ophthalmomaxillaris of Ota are of mesenchymal origin. This latter naevus affects the face in the areas corresponding in distribution to 2nd or 3rd divisions of the trigeminal nerve and is not uncommon in the yellow races. Many more women than men are seen with it, possibly for cosmetic reasons.

The investigations included histamine scratch tests in various pigment disorders and are shown to be abnormal in the neighbourhood of blue naevus, Mongolian spot and systematized pigmented naevus. This he believes to indicate a close connection between pigment production and the autonomic nervous system, and he frequently stresses that melanin production is under the control of the nervous system. The curious shape of the pigmented lesions of incontinentia pigmenti he believes can be explained by abnormalities in autonomic nerve supply.

In an abortive case of von Recklinghausen's disease examined fully *post mortem* he found that in the neighbourhood of the small pigment patches there was a proliferation of the nuclei of the Schwannian sheath of the coarse nerve bundles in the skin, indicating a close relationship between the pigment spots and the tumours in this disorder.

Several case-histories of malignant melanomas from various sites are recorded. He considers that most cases are melano-carcinomas, but agrees that a few which arise from a blue naevus are sarcomatous. Most cases so described in the literature are really carcinomatous, but with the naevus cells taking on an abnormal arrangement. Tumours lacking in melanin are not necessarily highly malignant as some people believe.

In considering depigmentary disturbances he maintains that leucoderma (Sutton) and vitiligo are really identical and that both are influenced by abnormalities of the nervous system. He postulates that in vitiligo the disturbance is situated in the neighbourhood of the spinal ganglia, and hence the symmetrical or unilateral systematized arrangement in some cases; in Sutton's disease the nervous disturbance is limited to the area of the naevus, and there is therefore little tendency for the depigmentation to extend.

Dyschromatosis symmetrica on the extremities is a disease common in the yellow races but not recorded in the white or black races. It consists of small pigment flecks resembling freckles mingled with a reticulated depigmentation. The author considers that the disease belongs to the same category as freckles or xeroderma pigmentosum from a genetical point of view. Similar depigmentation may follow perniosis.

Riehl's melanosis was seen frequently in Japan towards the end of the 1939-45 war. Included under this heading are cases induced by cosmetics. He considers the aetiology is a combination of factors including deficiencies of vitamin C and riboflavin, allowing external irritants to produce a greater effect than usual. Endocrine imbalance and dysharmony of the autonomic nervous system play a supplementary role. He confirms Urbach's experiment that melanin production due to the application of bergamot oil and ultra-violet light can be prevented by vitamin C injections and shows that riboflavin or adrenalin injections act similarly. Bergamot oil penetrates the skin less after injections of vitamin C or B₂.

The last part of the book describes experiments on goldfish. Black goldfish in which the pigment is thought to be melanin can be depigmented by injections of hydroquinone (its isomers resorcinol and pyrocatechol do not work). This action is thought to be due to a special suppression of dopa oxidase. Yellow-red and white goldfish can be turned black by injections of benzoquinone, and the dopa reaction becomes positive in the fish scales at the same time. The pigment production is accelerated by injections of vitamin A, B₂, C, or glutathione.

P. D. S.

MALIGNANT MELANOMA: A CLINICOPATHOLOGICAL STUDY. H. FANGER and W. F. ROBERTS. (1952) *New Engl. J. Med.*, 246, 813.

Tabulated findings in 47 cases of malignant melanoma show that in this series the disease occurred most commonly in the fifth, sixth and seventh decades.

The lower limbs, the face and arms were most commonly affected, in that order of frequency.

Patients survived for twenty-five months on the average after discovery of metastases, though one lived for more than ten years.

Histological features of importance were junctional activity, anaplasia, giant cells, pigment and mitosis.

The authors consider that "malignant melanomas are not invariably fatal, even with recurrences or metastases."

A. D. P.

SPOROTRICHOSIS. K. B. CASTLETON and V. L. REES. (1952) *J. Amer. med. Ass.*, **148**, 541.

Two cases are reported from Utah, the first from this part of the U.S.A. One was a worker in a mine, the other a schoolboy. Most reported cases have occurred in farmers or florists. The condition shows little or no tendency to spontaneous involution but responds well to iodides.

A. J. R.

ACUTE ULCERATIVE ENTERITIS DUE TO POLYARTERITIS. P. JERNSTROM and J. STASNEY. (1952) *J. Amer. med. Ass.*, **148**, 544.

In this patient, a negress aged 52, extensive intestinal ulceration was shown *post mortem* to have resulted from vascular thrombosis secondary to polyarteritis.

A. J. R.

CUTANEOUS SEQUELAE FOLLOWING TREATMENT OF BRONCHIAL ASTHMA WITH INORGANIC ARSENIC. F. PASCHER and J. WOLF. (1952) *J. Amer. med. Ass.*, **148**, 734.

A mixture containing Fowler's solution and potassium iodide is sometimes prescribed for bronchial asthma. Two cases of arsenical pigmentation are reported following this treatment. One patient also had arsenical keratoses and keratoderma.

A. J. R.

REITER'S DISEASE. S. RINKOFF. (1952) *J. Amer. med. Ass.*, **148**, 740.

A woman aged 49 showed the urethritis, conjunctivitis, iritis and arthritis of Reiter's disease. With one questionable exception all previously reported patients have been men.

A. J. R.

PUSTULAR MILIARIA. W. C. LOBITZ. (1952) *J. Amer. med. Ass.*, **148**, 1097.

This condition is most common in the adult, and can develop in any region where sweating occurs from any cause. The eruption is preceded by some other skin damage which has produced injury, destruction or blocking of the sweat duct or its orifice, such as contact dermatitis, neurodermatitis, urticaria, intertrigo or lichen planus. The miliaria may develop during the course of the preceding dermatitis or several weeks later. Pruritus is the only symptom. The individual lesion is a discrete superficial pustule not associated with a hair follicle but sometimes showing a central hyperkeratotic plug which may be mistaken for a hair. The pustules are most usually seen on flexor surfaces and in the flexures but can occur anywhere. They are usually sterile. Pustular miliaria is essentially a sweat retention phenomenon and not an infection and therefore does not require treatment as such.

A. J. R.

BARBERS' PILONIDAL SINUS. J. G. DOWNING. (1952) *J. Amer. med. Ass.*, **148**, 1501.

The report of a pilonidal sinus in the second interdigital space of a barber and a brief review of the literature.

A. J. R.

SPONTANEOUS VENOUS THROMBOSIS IN THE LEGS OF TALL MEN. N. NAIDE. (1952) *J. Amer. med. Ass.*, **148**, 1201.

Six men aged between 38 and 49, all between 6 ft. $\frac{1}{2}$ in. and 6 ft. 3 in. in height, developed spontaneous venous thrombosis in the legs. In 4 it followed severe physical exertion. All 6 had bilateral involvement either initially or eventually. In 3 pulmonary infarction was the first symptom. The factors determining this spontaneous thrombosis are discussed.

A. J. R.

DIAGNOSIS OF HERPES SIMPLEX INFECTIONS BY THE COMPLEMENT-FIXATION TEST.

D. C. GAJDUSEK, M. L. ROBBINS and F. C. ROBBINS. (1952) *J. Amer. med. Ass.*, **149**, 235.

Herpes complement-fixation antibody regularly appears in the serum or increases in titre in man, rabbit and guinea-pig following a primary infection or immunization with the virus. An increase of titre fourfold or greater is diagnostic of primary infection. The antibody may appear by the fourth day and may persist in high titre for over 15 months. No change in titre could be demonstrated in certain non-herpetic diseases such as generalized vaccinia, herpangina and erythema multiforme exudativum. Complement-fixation tests suggest that recurrent stomatitis and aphthosis, although not always caused by herpes simplex virus, may be in some instances.

A. J. R.

MACROGLOSSIA AS A MANIFESTATION OF PRIMARY SYSTEMIC AMYLOIDOSIS. W. G. ENSIGN. (1952) *J. Amer. med. Ass.*, **149**, 136.

The author lists the possible causes of macroglossia as myxoedema, acromegaly, tertiary syphilis, glycogenosis, primary systemic amyloidosis and congenital abnormalities, either lymph-angiomatous or muscular. The case is reported of a man aged 72 whose systemic amyloidosis presented as macroglossia which, although present in only one-third of cases, is a valuable diagnostic sign. The patient was shown at post mortem to have extensive amyloid deposits in the myocardium.

A. J. R.

DEMONSTRATION OF L.E. CELLS IN PERICARDIAL FLUID. A. J. SEAMAN and J. W. CHRISTERSON. (1952) *J. Amer. med. Ass.*, **149**, 145.

L.E. cells were demonstrated in the buffy coat of the pericardial fluid in a case in which this diagnosis had not been suspected. In a postscript brief mention is made of a further case in which L.E. cells were found in the pleural fluid.

A. J. R.

APLASTIC ANAEMIA FOLLOWING PROLONGED ADMINISTRATION OF CHLORAMPHENICOL. L. E. WILSON, M. S. HARRIS, H. H. HENSTELL, O. O. WITHERBEE and J. KAHN. (1952) *J. Amer. med. Ass.*, **149**, 231.

Sixty-two patients with chronic bronchopulmonary suppuration were given chloramphenicol over periods of 1 month to 14 months. Two patients developed severe aplastic anaemia. In 1 case which was fatal the drug had been given for 7 months and in the other for 5½ months. Five other cases of bone-marrow depression from chloramphenicol have been collected from the literature. One was fatal. In 1 of the reported cases, a child aged 4 months, granulocytopenia appeared after only 1·75 g. had been given in 2 days.

A. J. R.

INEFFECTIVENESS AND TOXICITY OF PODOPHYLLIN IN TREATMENT OF TINEA CAPITIS.

S. SCHWEBEL, W. SNYDER and W. N. SLINGER. (1952) *J. Amer. med. Ass.*, **149**, 261.

In 19 cases of *Microsporon audouini* scalp infection treated with 0·2% podophyllin in carbowax, only 2 cures were observed. In 8 cases there was an inflammatory reaction, but in only 2 of these did this favourably influence the course of the ringworm. In 3 cases in an earlier series an unusual toxic alopecia developed after 3 weeks of podophyllin treatment, non-inflammatory patches of complete alopecia appearing in areas remote from the ringworm patches.

A. J. R.

ALLERGIC CONTACT DERMATITIS DUE TO PORK CORTICOTROPIN. I. ZELIGMAN. (1952) *J. Amer. med. Ass.*, **149**, 263.

A nurse handling pork corticotropin developed a contact dermatitis involving the eyelids. Patch tests were strongly positive on 2 occasions.

A. J. R.

ANGIOMA VENOSUM RACEMOSUM WITH ANGIOMATOUS LESIONS OF SKIN AND OMENTUM. IRVING GILBERT. (1952) *Brit. med. J.*, **1**, 468.

A case of angioma venosum racemosum of the cervical spinal cord associated with angiomatic lesions of the omentum and skin naevi of the same metameres. The diagnostic value of the cutaneous lesions is stressed.

B. A. T.

HERPES ZOSTER VARICELLOSUS. D. I. McCALLUM. (1952) *Brit. med. J.*, **1**, 520.

Six cases of herpes zoster varicellous are described. Two contacts with one of these cases developed varicella within the incubation period of that disease, and during the incubation period one of these two varicella cases conveyed the infective agent of herpes zoster to another contact.

B. A. T.

ANTIHISTAMINES IN NON-URTICARIAL DERMATOSES, AND A RE-TRIAL OF ANTI-HISTAMINE IONTOPHORESIS. P. INMAN and I. CAMPBELL COWAN. (1952) *Brit. med. J.*, **1**, 1064.

The conflicting reports about the value of antihistamine ointments are referred to. Because the friction produced by inunction may make the dermatitis worse, antihistamines were introduced into the skin by iontophoresis. The results of treatment in 20 cases are given and the conclusion is that the method is free from toxic reaction. For localized areas of chronic dermatitis or pruritus it may have a useful though limited role.

B. A. T.